

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
  - TEXT CUT OFF AT TOP, BOTTOM OR SIDES
  - FADED TEXT
  - ILLEGIBLE TEXT
  - SKEWED/SLANTED IMAGES
  - COLORED PHOTOS
  - BLACK OR VERY BLACK AND WHITE DARK PHOTOS
  - GRAY SCALE DOCUMENTS
- 

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

FEB 01 2002

TECH CENTER 1600/2900

1647



1600

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/574,443

DATE: 01/24/2002

TIME: 14:40:13

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw

ENTERED

3 <110> APPLICANT: Dahiyat, Bassil I.  
4 Morton, Andrew G.  
6 <120> TITLE OF INVENTION: NOVEL PROTEINS WITH INSULIN-LIKE ACTIVITY USEFUL IN THE  
TREATMENT OF

7 DIABETES

9 &lt;130&gt; FILE REFERENCE: A-68064-1/RFT/RMS/RMK

11 &lt;140&gt; CURRENT APPLICATION NUMBER: US 09/574,443

12 &lt;141&gt; CURRENT FILING DATE: 2000-05-19

14 &lt;150&gt; PRIOR APPLICATION NUMBER: US 60/134,930

15 &lt;151&gt; PRIOR FILING DATE: 1999-05-19

17 &lt;160&gt; NUMBER OF SEQ ID NOS: 23

19 &lt;170&gt; SOFTWARE: PatentIn version 3.1

21 &lt;210&gt; SEQ ID NO: 1

22 &lt;211&gt; LENGTH: 110

23 &lt;212&gt; TYPE: PRT

24 &lt;213&gt; ORGANISM: Homo sapiens

26 &lt;300&gt; PUBLICATION INFORMATION:

27 &lt;308&gt; DATABASE ACCESSION NO: P01308

28 &lt;309&gt; DATABASE ENTRY DATE: 1986-07-21

29 &lt;313&gt; RELEVANT RESIDUES: (1)..(110)

31 &lt;400&gt; SEQUENCE: 1

33 Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu

34 1 5 10 15

37 Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gly His Leu Cys Gly

38 20 25 30

41 Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe

42 35 40 45

45 Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly

46 50 55 60

49 Gln Val Glu Leu Gly Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu

50 65 70 75 80

53 Ala Leu Glu Gly Ser Leu Gly Lys Arg Gly Ile Val Glu Gln Cys Cys

54 85 90 95

57 Thr Ser Ile Cys Ser Leu Tyr Gln Leu Glu Asn Tyr Cys Asn

58 100 105 110

61 &lt;210&gt; SEQ ID NO: 2

62 &lt;211&gt; LENGTH: 51

63 &lt;212&gt; TYPE: PRT

64 &lt;213&gt; ORGANISM: Homo sapiens

66 &lt;300&gt; PUBLICATION INFORMATION:

67 &lt;308&gt; DATABASE ACCESSION NO: 229122

68 &lt;309&gt; DATABASE ENTRY DATE: 1992-07-10

69 &lt;313&gt; RELEVANT RESIDUES: (1)..(51)

71 &lt;400&gt; SEQUENCE: 2

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/574,443

DATE: 01/24/2002

TIME: 14:40:13

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw

73 Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln Leu  
 74 1 5 10 15  
 77 Glu Asn Tyr Cys Asn Phe Val Asn Gln His Leu Cys Gly Ser His Leu  
 78 20 25 30  
 81 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr  
 82 35 40 45  
 85 Pro Lys Thr  
 86 50

89 &lt;210&gt; SEQ ID NO: 3

90 &lt;211&gt; LENGTH: 21

91 &lt;212&gt; TYPE: PRT

92 &lt;213&gt; ORGANISM: Homo sapiens

94 &lt;300&gt; PUBLICATION INFORMATION:

95 &lt;301&gt; AUTHORS: Ciszak, E. and Smith, G.D.

96 <302> TITLE: Crystallographic evidence for dual coordination around zinc in the T3R3  
 97 human insulin hexamer

98 &lt;303&gt; JOURNAL: Biochemistry

99 &lt;304&gt; VOLUME: 33

100 &lt;305&gt; ISSUE: 6

101 &lt;306&gt; PAGES: 1512-1517

102 &lt;307&gt; DATE: 1994-02-15

103 &lt;308&gt; DATABASE ACCESSION NO: 494680

104 &lt;309&gt; DATABASE ENTRY DATE: 1993-11-19

105 &lt;313&gt; RELEVANT RESIDUES: (1)..(21)

107 &lt;400&gt; SEQUENCE: 3

109 Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln Leu  
 110 1 5 10 15

113 Glu Asn Tyr Cys Asn

114 20

117 &lt;210&gt; SEQ ID NO: 4

118 &lt;211&gt; LENGTH: 30

119 &lt;212&gt; TYPE: PRT

120 &lt;213&gt; ORGANISM: Homo sapiens

122 &lt;300&gt; PUBLICATION INFORMATION:

123 &lt;301&gt; AUTHORS: Ciszak, E. and Smith, G.D.

124 <302> TITLE: Crystallographic evidence for dual coordination around zinc in the T3R3  
 125 human insulin hexamer

126 &lt;303&gt; JOURNAL: Biochemistry

127 &lt;304&gt; VOLUME: 33

128 &lt;305&gt; ISSUE: 6

129 &lt;306&gt; PAGES: 1512-1517

130 &lt;307&gt; DATE: 1994-02-15

131 &lt;308&gt; DATABASE ACCESSION NO: 494681

132 &lt;309&gt; DATABASE ENTRY DATE: 1993-11-19

133 &lt;313&gt; RELEVANT RESIDUES: (1)..(30)

135 &lt;400&gt; SEQUENCE: 4

137 Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu Tyr  
 138 1 5 10 15

141 Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/574,443

DATE: 01/24/2002

TIME: 14:40:13

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw

```

142          20          25          30
145 <210> SEQ ID NO: 5
146 <211> LENGTH: 21
147 <212> TYPE: PRT
148 <213> ORGANISM: Homo sapiens
150 <300> PUBLICATION INFORMATION:
151 <301> AUTHORS: Ciszak, E. and Smith, G.D.
152 <302> TITLE: Crystallographic evidence for dual coordination around zinc in the T3R3
153      human insulin hexamer
154 <303> JOURNAL: Biochemistry
155 <304> VOLUME: 33
156 <305> ISSUE: 6
157 <306> PAGES: 1512-1517
158 <307> DATE: 1994-02-15
159 <308> DATABASE ACCESSION NO: 494682
160 <309> DATABASE ENTRY DATE: 1993-11-19
161 <313> RELEVANT RESIDUES: (1)..(21)
163 <400> SEQUENCE: 5
165 Gly Ile Val Glu Gln Cys Cys Thr Ser Ile Cys Ser Leu Tyr Gln Leu
166 1          5          10          15
169 Glu Asn Tyr Cys Asn
170          20
173 <210> SEQ ID NO: 6
174 <211> LENGTH: 30
175 <212> TYPE: PRT
176 <213> ORGANISM: Homo sapiens
178 <300> PUBLICATION INFORMATION:
179 <301> AUTHORS: Ciszak, E. and Smith, G.D.
180 <302> TITLE: Crystallographic evidence for dual coordination around zinc in the T3R3
181      human insulin hexamer
182 <303> JOURNAL: Biochemistry
183 <304> VOLUME: 33
184 <305> ISSUE: 6
185 <306> PAGES: 1512-1517
186 <307> DATE: 1994-02-15
187 <308> DATABASE ACCESSION NO: 494683
188 <309> DATABASE ENTRY DATE: 1993-11-19
189 <313> RELEVANT RESIDUES: (1)..(30)
191 <400> SEQUENCE: 6
193 Phe Val Asn Gln His Leu Cys Gly Ser His Leu Val Glu Ala Leu Tyr
194 1          5          10          15
197 Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr
198          20          25          30
201 <210> SEQ ID NO: 7
202 <211> LENGTH: 51
203 <212> TYPE: PRT
204 <213> ORGANISM: Artificial Sequence
206 <220> FEATURE:
207 <223> OTHER INFORMATION: synthetic

```

## RAW SEQUENCE LISTING

DATE: 01/24/2002

PATENT APPLICATION: US/09/574,443

TIME: 14:40:13

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw

209 &lt;400&gt; SEQUENCE: 7

211 Asn Leu Val Glu Gln Ala Ser Thr Ser Gln Ala Ser Leu Tyr Gln Ile

212 1 5 10 15

215 Tyr Asn Phe Asp Asn Asp Val Asn Phe His Leu Tyr Gly Ser His Ile

216 20 25 30

219 Arg Glu Trp Leu Tyr Leu Val Ala Gly Glu Arg Gly Phe Asn Phe Asp

220 35 40 45

223 Pro Lys Thr

224 50

227 &lt;210&gt; SEQ ID NO: 8

228 &lt;211&gt; LENGTH: 51

229 &lt;212&gt; TYPE: PRT

230 &lt;213&gt; ORGANISM: Artificial Sequence

232 &lt;220&gt; FEATURE:

233 &lt;223&gt; OTHER INFORMATION: synthetic

235 &lt;400&gt; SEQUENCE: 8

237 Gly Ile Val Glu Gln Cys Ser Thr Ser Ile Cys Ser Leu Tyr Gln Leu

238 1 5 10 15

241 Glu Asn Tyr Cys Asn Phe Glu Asn Tyr His Leu Tyr Gly Ser His Leu

242 20 25 30

245 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr

246 35 40 45

249 Pro Lys Thr

250 50

253 &lt;210&gt; SEQ ID NO: 9

254 &lt;211&gt; LENGTH: 51

255 &lt;212&gt; TYPE: PRT

256 &lt;213&gt; ORGANISM: Artificial Sequence

258 &lt;220&gt; FEATURE:

259 &lt;223&gt; OTHER INFORMATION: synthetic

261 &lt;400&gt; SEQUENCE: 9

263 Gly Ile Val Glu Gln Cys Ser Thr Ser Ile Cys Ser Leu Tyr Gln Leu

264 1 5 10 15

267 Glu Asn Tyr Cys Asn Phe Val Asn Gln His Leu Asp Gly Ser His Leu

268 20 25 30

271 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr

272 35 40 45

275 Pro Lys Thr

276 50

279 &lt;210&gt; SEQ ID NO: 10

280 &lt;211&gt; LENGTH: 51

281 &lt;212&gt; TYPE: PRT

282 &lt;213&gt; ORGANISM: Artificial Sequence

284 &lt;220&gt; FEATURE:

285 &lt;223&gt; OTHER INFORMATION: synthetic

287 &lt;400&gt; SEQUENCE: 10

289 Gly Ile Val Glu Gln Cys Ser Thr Ser Ile Cys Ser Leu Tyr Gln Leu

290 1 5 10 15

293 Glu Asn Tyr Cys Asn Phe Thr Asn Tyr His Leu Tyr Gly Ser His Leu

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/574,443

DATE: 01/24/2002

TIME: 14:40:13

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw

```

294          20          25          30
297 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr
298          35          40          45
301 Pro Lys Thr
302          50
305 <210> SEQ ID NO: 11
306 <211> LENGTH: 51
307 <212> TYPE: PRT
308 <213> ORGANISM: Artificial Sequence
310 <220> FEATURE:
311 <223> OTHER INFORMATION: synthetic
313 <400> SEQUENCE: 11
315 Gly Ile Val Glu Gln Cys Ser Thr Ser Ile Cys Ser Leu Tyr Gln Leu
316 1          5          10          15
319 Glu Asn Tyr Cys Asn Phe Val Asn Tyr His Leu Tyr Gly Ser His Leu
320          20          25          30
323 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr
324          35          40          45
327 Pro Lys Thr
328          50
331 <210> SEQ ID NO: 12
332 <211> LENGTH: 51
333 <212> TYPE: PRT
334 <213> ORGANISM: Artificial Sequence
336 <220> FEATURE:
337 <223> OTHER INFORMATION: synthetic
339 <400> SEQUENCE: 12
341 Gly Ile Val Glu Gln Cys Ser Thr Ser Ile Cys Ser Leu Tyr Gln Leu
342 1          5          10          15
345 Glu Asn Tyr Cys Asn Phe Val Asn Gln His Leu Glu Gly Ser His Leu
346          20          25          30
349 Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr
350          35          40          45
353 Pro Lys Thr
354          50
357 <210> SEQ ID NO: 13
358 <211> LENGTH: 47
359 <212> TYPE: PRT
360 <213> ORGANISM: Artificial Sequence
362 <220> FEATURE:
363 <223> OTHER INFORMATION: synthetic
365 <400> SEQUENCE: 13
367 Gly Ile Val Glu Gln Cys Glu Thr Ser Ile Cys Ser Leu Tyr Gln Leu
368 1          5          10          15
371 Glu Asn Tyr Cys Asn His Leu Glu Gly Ser His Leu Val Glu Ala Leu
372          20          25          30
375 Tyr Leu Val Cys Gly Glu Arg Gly Phe Phe Tyr Thr Pro Lys Thr
376          35          40          45
379 <210> SEQ ID NO: 14

```

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/574,443

DATE: 01/24/2002

TIME: 14:40:14

Input Set : A:\ES.txt

Output Set: N:\CRF3\01242002\I574443.raw